

## REMARKS

Claims 1-4, and 29-33 were pending in the application. With this Amendment the prior pending claims have been cancelled and new claims 34-43 have been added to further define the invention. No new matter has been presented. Support for the new claims is found in the prior pending claims as well as throughout the specification, and especially page 5, line 30 through page 6, line 7 and page 8, lines 15-18 which describe the presence of a protective layer comprising at least one of the substances specified. One such substance, silicon nitride, includes beneficial properties such as high hardness and heat conductivity as well as low coefficient of expansion as set forth on page 7, lines 9-11, irrespective of which a "further substance" may be added. Barrier layers are described in the examples and page 4, lines 28-30.

Former claims 1-2 had been rejected under 35 U.S.C. §112, first paragraph as the Examiner states that the specification did not reasonably provide enablement for any and every substance that forms a mixture, alloy or a compound with iridium or silicon nitride.

In order to prevent any 35 U.S.C. §112 rejection, claims 34 and 35 similar to former claims 1 and 2 have been presented without the term "any further substance". Claims 34 and 35 state that the protective layer comprises at least silicon nitride, with support in the specification set forth on page 8, lines 10-14 and example 3. Accordingly, it is respectfully submitted that 35 U.S.C. §112 first paragraph rejection has been rendered moot.

Claims 4 and 29-33 have been rejected under 35 U.S.C. §102(b) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 5,310,603 to Fukuda et al. The Examiner states on page 4 of the Office Action that "as the layers are deposited through electron beam vapor deposition there will be mixing at the interfaces of the materials..."

In order to readily distinguish from mixing effects, new claims 36-43 utilize the term "barrier layer" instead of the term "interface" utilized in former claims 4 and 29-33. A barrier layer, in general, specifies a particular layer which is introduced between two alternating layers operating as a diffusion barrier, see page 4 lines 28-30. Furthermore, specific embodiments of barrier layers are claimed in independent claims 36 and 40 and

claims dependent thereon. Namely, a molybdenum carbide barrier layer is claimed in claim 36 and a barrier layer containing nitrogen is claimed in claim 40. A molybdenum carbide barrier layer is illustrated in Example 1. A barrier layer containing nitrogen is illustrated in Example 3. None of the cited references, especially the Fukuda reference discloses the specifically claimed barrier layers set forth in claims 36-43 and accordingly, there can be no anticipation thereof.

With regard to the 35 U.S.C. §103(a) obviousness rejection, the Applicants respectfully disagree with the Examiner's rejection. Fukuda teaches to combine, for example, molybdenum carbide as a low refractive/high melting point material, with silicon carbide as high refractive/high melting point material as alternating layers, see for example the teachings in column 2, lines 33-42, column 5, lines 10-20 and column 7, lines 5-15. Thus, molybdenum carbide is one of the two alternating layers having different refractive indices. According to the claims of the present invention, for example, molybdenum layer and a silicon layer, see claim 37, or molybdenum layer and a beryllium layer, see claim 39, are combined as alternating layers. Molybdenum carbide is introduced as the barrier layer between two alternating layers in order to prevent diffusion of the alternating layer components. Thus, the structure of the stack and the purpose of the molybdenum carbide,  $\text{Mo}_2\text{C}$ , layer are completely different when compared with the Fukuda reference. Therefore, the Fukuda reference cannot render claimed subject matter of the present invention obvious. One of ordinary skill in the art would not be led in the direction taken by the Applicants when presented with the teachings of the Fukuda reference.

Claims 1-3 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent Application Publication No. 2002/0084425 to Klebanoff et al.

It is respectfully submitted that Klebanoff cannot anticipate nor teach or suggest the present invention as claimed in claims 34 and 35. In paragraphs [0011] and [0012] Klebanoff teaches a Mo/Si multilayered structure with a top most layer of silicon and a capping layer of Ru, Rh, Pd, Ir, Pt, and Au or a combination thereof. Accordingly, Klebanoff cannot anticipate Applicants' claimed protective layer system, that is molybdenum carbide covered by iridium, aluminum oxide covered by iridium, titanium nitride covered by iridium, or titanium oxide covered by iridium, or wherein the protective layer system comprises at least silicon nitride as claimed. Only hindsight motivation can

be utilized to modify the Klebanoff reference impermissibly as there is no teaching or suggestion for Applicants' specifically claimed protective layer system.


Claims 1-3 were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,759,141 to Prisbrey.

It is respectfully submitted that the Prisbrey reference cannot anticipate, nor teach or suggest new claims 34 and 35 which are similar to former claims 1-3. The Examiner states that Prisbrey discloses a capping layer for a multilayer reflective coating comprises of iridium or an iridium compound and the multilayer reflective coating is comprised of alternating layers of molybdenum and silicon. New claims 34 and 35 do not include iridium or carbon covered by iridium as a protective layer. Prisbrey cannot anticipate nor teach or suggest Applicants' specifically claimed protective layer system that is molybdenum carbide covered by iridium, aluminum oxide covered by iridium, titanium nitride covered by iridium, or titanium dioxide covered by iridium or comprises at least silicon nitride. In view of the Prisbrey reference, one of ordinary skill in the art would not be led in the direction the Applicant has taken, absent impermissible hindsight.

It is respectfully submitted that the claims are in condition for allowance and a Notice of such is earnestly solicited. Should the Examiner have any questions or concerns regarding this response, a telephone call to the undersigned is greatly appreciated in order to expedite allowance of the application.

Respectfully submitted,

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